ACTION START-LIST FOR MIGRATORY AREAS (INCLUDES LAKES, SHIP CANAL, LOCKS, ESTUARY/NEARSHORE) (ALL TIER 1)

Technical priorities from WRIA 8 Conservation Strategy are listed in bold. Land use, public outreach, and site specific actions are listed for each technical priority. Technical priorities are interrelated, and many actions address multiple technical priorities.

NOTE: Actions for Sammamish River are located in the North Lake Washington Tributaries Action Start-List.

LAKE WASHINGTON (INCLUDING UNION BAY) AND LAKE SAMMAMISH RECOMMENDATIONS

Reduce predation to outmigrating juvenile Chinook by: reducing bank hardening, restoring overhanging riparian vegetation, replacing bulkheads and rip-rap with sandy beaches with gentle slopes, and use of mesh dock surfaces and/or community docks.

Basinwide recommendations (entire subarea is located with Urban Growth Area):

- Encourage salmon friendly shoreline design during new construction or redevelopment by offering incentives and regulatory flexibility to improve bulkhead and dock design and revegetate shorelines. Increase enforcement and address nonconforming structures over long run by requiring that major redevelopment projects meet current standards. (C27-29, N50, N52-53, I54-56)
- Discourage construction of new bulkheads; offer incentives (e.g., provide expertise, expedite permitting) for voluntary removal of bulkheads, beach improvement, riparian revegetation. (C30, N51, I52)
- Support joint effort by NOAA Fisheries and other agencies to develop dock/pier specifications to streamline federal/state/local permitting; encourage similar effort for bulkhead specifications. (C32-33, N55-56, I57, I66)
- Promote value of light-permeable docks, smaller piling sizes, and community docks to both salmon and landowners through direct mailings to lakeshore landowners or registered boat owners sent with property tax notice or boat registration tab renewal. Offer financial incentives for community docks in terms of reduced permit fees, loan fees/percentage rates, taxes, and permitting time, in addition to construction cost savings. (C734, C735)
- Develop workshop series specifically for lakeshore property owners on lakeside living: natural yard care, alternatives to vertical wall bulkheads, fish friendly dock design, best management practices for aquatic weed control, porous paving, and environmentally friendly methods of maintaining boats, docks, and decks. Related efforts include creation of a website to convey workshop material, an awareness campaign, “Build a Beach,” to illuminate impact of bulkheads on development of sandy beaches. (C729, C730, C736)
- Restore shoreline in Lake Washington Section 1: restore Washington Department of Natural Resources property as part of shoreline trail project; work with private property owners to restore shoreline in Section 1. Use interpretive signage where possible to explain restoration efforts. (C269, C270, C272, C738)
- Restore shoreline in Lake Washington Section 2: remove marina and bulkhead at Rainer Beach Lake Park, create shallow-water habitat and restore native overhanging vegetation; remove concrete bulkhead in northern portion of Pritchard Island Beach, create shallow-water habitat and restore native overhanging vegetation. (C275, C276)
- Lake Sammamish State Park Protection: Several proposals exist pertaining to planned park development. Ensure that final park development plan adequately protects floodplain/riparian

processes and mouth of Issaquah Creek. (Issaquah Reach 1, Lake Sammamish Section 1) (I204, I292)

Protect and restore water quality in tributaries and along shoreline. Restore coho runs in smaller tributaries as control mechanism to reduce the cutthroat population. Reconnect and enhance small creek mouths as juvenile rearing areas.

Basinwide recommendations:

- Address water quality and high flow impacts from creeks and shoreline development through NPDES Phase 1 and Phase 2 permit updates, consistent with Washington Department of Ecology's 2001 Stormwater Management Manual, including low impact development techniques, on-site stormwater detention for new and redeveloped projects, and control of point sources that discharge directly into the lakes. Stormwater impacts from major transportation projects (for new and expanded roadways proposed during the next ten years) should be addressed. Encourage low impact development through regulations, incentives, education/training, and demonstration projects throughout subarea. (C39, N63, I72, I74)
- Protect and restore water quality and other ecological functions in tributaries to reduce effects of urbanization and reduce conditions which encourage cutthroat. Protect and restore forest cover, riparian buffers, wetlands, and creek mouths by revising and enforcing critical areas ordinances and Shoreline Master Programs, incentives, and flexible development tools. (C38, N64, I75 C747, C748)
- Promote through design competitions and media coverage the use of "rain gardens" and other low impact development practices that mimic natural hydrology. Combine a home/garden tour or "Street of Dreams" type event featuring these landscape /engineering treatments. (C748)
- Enhance small creek mouths in Lake Washington Segment 1: enhance Mouth of Kennydale Creek in Gene Coulon Park; enhance mouth and lower reaches of Johns Creek. Encourage participation of citizen-based stewardship efforts in these restoration projects (such as Stream Teams). (C268, C267, C719, C721, N716)

Additional actions approved by the Steering Committee in response to public comment:

- Daylight Zacusse Creek and enhance mouth on East shore of Lake Sammamish to benefit Kokanee, juvenile Chinook and other fish species.
- Enhance mouth and protect lower reaches of Ebright Creek on East shore of Lake Sammamish to benefit Kokanee, juvenile Chinook and other fish species. If property in lower reaches of creek is acquired there could be educational outreach opportunities on the site.

LAKE UNION, SHIP CANAL AND LOCKS RECOMMENDATIONS

High water temperatures impede juvenile Chinook outmigration during summer in Ship Canal and lead to increased activity by predators (primarily bass). Options to reduce water temperatures in Ship Canal should be evaluated. In addition, adult migration is affected by high temperatures and low dissolved oxygen at the Locks.

Basinwide recommendations (entire subarea is located within Urban Growth Area):

- Continue to work on improving conditions at the Locks to improve juvenile Chinook outmigration. Actions could include:
  - Add/replace strobe lights to locks to deter smolts and prevent entrainment. (M204)
  - Improve estuary conditions upstream of Locks: Modify the salt water barrier to let salt water in through the Locks to cool water above Locks or move the salt water drain upstream to the west end of the Fremont Cut. (M206)

- Locks Natural Estuary: Construct a more natural, fairly wide and long channel at the Locks facility that would allow fish to move back and forth between warmer lake outflow and cooler tidal water, and allow tidal change to inundate areas designed into the channel where fish could find refuge to hold and choose their preferred salinity. (M205)
- Take advantage of enormous outreach potential at the Locks by working with the Corp of Engineers to expand or enhance educational displays. Include information about ongoing and proposed WRIA 8 conservation efforts being both taken at the Locks and throughout the watershed, as well as actions that citizens can take to improve salmon habitat at home.

Additional investigations are needed to determine habitat characteristics that could provide Chinook with refuge from predators in Ship Canal, including impacts of docks. Riparian vegetation should be restored to provide cover for juvenile migrants.

Basinwide recommendations:

- Explore ways to reduce predation in Portage Bay, Lake Union and Ship Canal. Conduct pilot projects to reduce predator habitat (such as reducing number of docks or removing in-water structures) or increase refuge for juvenile Chinook and apply lessons learned to future actions regarding docks and riparian vegetation. (M216, M214)
- Coordinate with local businesses to sponsor a shoreline revegetation campaign, incorporating environmental stewardship as part of redevelopment occurring within Ship Canal area. Extend message (and sponsorship) through signage along shore, in-store promotions (at business's discretion), and media recognition. (M707)

ESTUARY AND NEARSHORE RECOMMENDATIONS (STARTS WEST OF LOCKS)

Please note: There is scientific uncertainty about Nearshore habitat and Chinook use of that habitat. Due to these uncertainties the Nearshore reaches were not prioritized using the EDT model. Experimental approaches to the protection of functioning habitat and the restoration of ecosystem processes should be implemented.

Protect remaining feeder bluff(s) that supply sediment and support littoral habitat creation. Undertake sediment source study to establish where feeder bluffs were prior to railroad and quantify rates of erosion. Based on study results, work with known feeder bluff locations to open up slide prone areas so that slides make it into nearshore, or start a beach nourishment program.

Basinwide recommendations (entire subarea is located within Urban Growth Area):

- Bluffs on Magnolia and Discovery Park in Seattle are only ones in WRIA 8 that are not armored by the railroad and have some unarmored locations (publicly and privately owned). Prohibit bulkheads or any other form of armoring and development at these locations through Seattle's critical areas ordinance and Shoreline Master Program. (M1)
- Support King County-funded sediment source study to: 1) establish where feeder bluffs were prior to the railroad, and 2) qualitatively assess rates of erosion and sediment contribution of those bluffs. Expect study completion by 3/05. Based on study results:
  - Map those bluffs that are most critical to protect (to preserve future opportunities to restore them to natural function), and protect them from future development through critical areas ordinance and/or Shoreline Master Program updates or acquisition. Note that steep slopes that are already developed need to be protected from erosion as a health and safety issue.
  - Do pilot projects to open up certain slide prone areas (e.g., by building trestles under railroad), so that slides make it into the nearshore and/or investigate appropriateness of a beach nourishment program. The experimental nature of a beach nourishment program requires a comprehensive and robust adaptive management and monitoring system. (M2, M3)

- Create an education campaign for property owners along bluff as well as general public: *Have you fed your beach today?* Define feeder bluffs, challenge the notion that all erosion is a bad thing. (M724)

Reduce bank hardening, especially in areas where armoring falls within tidal zone and/or separates a sediment source from nearshore environment, to restore natural shoreline accretion and depletion processes and support littoral habitat creation. Protect and restore Marine Riparian Vegetation (MRV), to maintain overhanging cover and terrestrial inputs for juvenile Chinook and their prey.

Basinwide recommendations:

- Protect remaining nearshore vegetation (on low or high bluffs) through regulation and/or acquisition. Regulatory tools to protect vegetation and prevent further development on and near top of bluffs, include: steep slope ordinances, bald eagle protection ordinances, critical areas ordinances, and clearing ordinances. (M7)
- Offer incentives to encourage bulkhead removal and revegetation along shoreline, including: allow regulatory flexibility during redevelopment, provide expertise (e.g., templates for shoreline planting plan, bulkhead design); expedite permitting at local, state and federal levels. (M8)
- For areas with existing residential, commercial, and industrial development west of the railroad (e.g. Nakeeta Beach, Point Wells, Richmond Beach):
  - Prohibit new development, at least in areas designated as conservancy.
  - During redevelopment, reduce overall impacts to nearshore, e.g., limit additional riprap to that required to protect structures, require riparian revegetation, avoid construction in intertidal zone, use smallest feasible footprint for structures, redevelop industrial sites into less intensive uses.
  - Promote pilot projects to better understand impacts of bank hardening in estuary and nearshore. As site specific projects are pursued "to remove structures, fill, and bulkheads" through fee simple purchase of parcels, address any regulatory or programmatic actions in order to expedite these projects. (M4)
- Commodore Park and Wolfe Creek Restoration: Explore feasibility of habitat restoration at Commodore Park, located immediately downstream of the Hiram M. Chittenden Locks on the south bank. Armored seawall should be removed and restored to a gentler vegetated slope. Project could be combined with daylighting of Wolf Creeke to create a pocket estuary downstream of the locks. (M250)
- Offer shoreline property owners a series of shoreline design workshops on: shoreline planting design/ noxious weed management; slope stabilization and erosion control using vegetation; natural yard care; porous paving options; alternatives to vertical wall bulkheads; salmon friendly dock design; and environmentally friendly methods of maintaining boats, docks, and decks. Offer professional workshops to marine contractors and design professionals on more environmentally friendly shoreline design. (M714, M716, M718, M719)

Reduce the number and coverage of overwater structures (e.g., docks, piers) as a way to reduce segmentation of the shoreline and the effects on both habitat forming processes and juvenile Chinook behavior.

Basinwide recommendations:

- Prohibit new residential overwater structures. For new public facilities (e.g., ferry docks), incorporate salmon-friendly design features and mitigate for unavoidable impacts. Retrofit existing overwater structures with salmon friendly design features. Where applicant meets guidelines for marine overwater structures, offer expedited local/state/federal permitting (similar to concept being promoted for Lake Washington overwater structures by NOAA Fisheries and other agencies). (M10, M11, M13)

- Remove overwater structures and pilings when possible; increase interpretive signage and media exposure at areas where structures are removed such as at Edmonds parks. Offer incentives to build community docks to replace individual docks in Salmon Bay. (M11)
- Expand outreach about value of eelgrass beds as juvenile source of food and habitat – and the negative effects that docks, overwater structures, and bulkheads have on the eelgrass. Encourage combined docks or more salmon friendly designs that impede less sediment and let more light into water; involve community and youth in eelgrass replantings and monitoring studies. (M714, M716, M721)

Reconnect and enhance small stream mouths to create pocket estuaries for smaller juvenile Chinook; for WRIA 8 fish, pocket estuaries may have most benefit near the Locks by providing an increased estuary area. Reconnect backshore areas (e.g., marshes, wetlands) to contribute to shoreline habitat diversity and terrestrial inputs. More information is needed about marine nearshore habitat processes and connections to juvenile Chinook salmon habitat, and how railroad design could be altered to restore access to pocket estuaries and backshore areas.

Basinwide recommendations:

- Protect stream mouths and wetlands from further degradation through Shoreline Master Programs and critical areas ordinances. Once stream mouths and wetlands are restored, protect from impacts from development through buffer requirements and stormwater management programs. (M14, M17, M18)
- Implement pilot projects to replace culverts with open bottom culverts or bridges/trestles wherever possible to allow for sand and gravel, large woody debris, and terrestrial inputs to contribute to the nearshore.
- Big Gulch Culvert Replacement: Replacement of the undersized culvert under the railroad with a trestle system to restore system connectivity and improve sediment transport into the nearshore. (M222)
- Implement projects to reconnect backshore areas, including:
  - Willow Creek Daylighting: Daylighting creek through existing fuel pier (using box culverts) will improve connectivity with Willow Creek Marsh. Proposed mitigation project for nearby "Edmonds Crossing" development. (M233)
  - Woodway Tidal Lagoon North: Potential culvert improvement project at an inter-tidal lagoon and mud flat where railroad was built offshore south of Willow Creek. (M235)
  - Deer Creek Culvert Replacement: Enhance the connectivity of Deer Creek and the associated estuarine wetland with the nearshore by replacing two concrete culverts with an oversized culvert or a trestle bridge. Potential Sound Transit mitigation project. (M236)
- Combine above restoration efforts with increased interpretive signage and video documentation for airing on government cable TV; make copies available to neighborhood and stewardship associations and encourage their participation in hands-on projects.
- Work with real estate community to help promote value of creek mouths to both property owners, environment, and shoreline community; encourage property owners to help restore them. Enlist help of neighborhood stewardship associations and Seattle Public Utility's Creek Stewardship program. (M720)

Protect sediment and water quality, especially near commercial and industrial areas (e.g., fuel spills, discharge of pollutants, etc.).

Basinwide recommendations:

- Address stormwater impacts (water quality and flows) throughout sub-area and from development near tops of bluffs, by: revising Phase 1 and 2 NPDES permits (consistent with Washington Department of Ecology's 2001 Stormwater Management Manual), requiring or

encouraging low impact development, retrofitting existing developments using natural drainage systems (e.g., SEAStreets). (M19)

- Determine extent to which residential structures along nearshore are on septic systems; determine if these systems are operating properly and if not require that they be fixed. Require that septic systems be inspected at time of sale. (M20)
- Discourage or prohibit any further filling and dredging in nearshore except for essential public facilities, and where associated with shoreline restoration projects. (M21)
- Promote boater/sea plane education campaign in order to improve and protect water quality compromised by fuel or toxic compounds from boat repairs, boat and sea plane maintenance. Carry out through signage at marinas, sea plane docks, boat yards, as well as messaging sent with boat/plane license registration. (M728)
- Educate and support businesses, property management companies, and homeowners associations on stormwater best management practices, specifically related to parking lot cleaning, storm drain maintenance and road cleaning. (M730)
- Train groundskeepers and property management companies about water polluting effects of landscape practices. Employ the “pride in workmanship” strategy, by placing signs that list who maintains the landscapes and parking lots along shorelines and the maintenance practices that they employ. (M729)